



Developing Physiologic Models for Emergency Medical Procedures Under Microgravity

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Several technological enhancements have been made to METI's commercial Emergency Care Simulator (ECS) with regard to how microgravity affects human physiology. The ECS uses both a software-only lung simulation, and an integrated mannequin lung that uses a physical lung bag for creating chest excursions, and a digital simulation of lung mechanics and gas exchange. METI's patient simulators incorporate models

of human physiology that simulate lung and chest wall mechanics, as well as pulmonary gas exchange.

Microgravity affects how O₂ and CO₂ are exchanged in the lungs. Procedures were also developed to take into affect the Glasgow Coma Scale for determining levels of consciousness by varying the ECS eye-blinking function to partially indicate the level of consciousness of the patient. In addition, the ECS was modi-

fied to provide various levels of pulses from weak and thready to hyper-dynamic to assist in assessing patient conditions from the femoral, carotid, brachial, and pedal pulse locations.

This work was done by Nigel Parker and Veronica O'Quinn of Medical Education Tech, Inc. for Johnson Space Center. Further information is contained in a TSP (see page 1). MSC-23922-1